10/584018
IAP20 Rec'd PCT/PTO 21 JUN 2006

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17 February 2006

**The Commissioner of Patents**
Woden, A.C.T. 2606

Dear Commissioner,

| | |
|---|---|
| Re: | International Patent Application No. PCT/AU2004/001800 |
| Title: | Glycosaminoglycan (GAG) Mimetics |
| Applicant: | Progen Industries Limited |
| Our Ref: | 031392PC/KF |

We refer to the Written Opinion dated 20 December 2005 in respect of the above application.

On behalf of the applicant, we wish to make amendments under Article 34, specifically:

In the claims:

claim 1 is amended;
claim 7 is new;
claim 8 is new;
claim 9 is renumbered;
claim 10 is renumbered and amended;
claim 11 is renumbered;
claim 12 is renumbered and amended;
claim 13 is renumbered and amended; and
claim 14 is renumbered and amended.

In the description:

page 3 lines 1 to 30 are amended; and
page 4 lines 1 to 13 are amended.

We **enclose** new pages 3, 4, and 51 to 53 containing the above changes.

Yours respectfully
**CULLEN & CO.**

**CLARISSA WYNNE**

Enc. New pages

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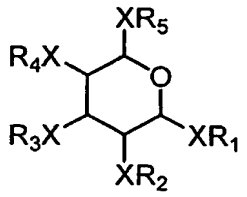



I

wherein:

each X is independently $CH_2$, C(O), N, O, S, S(O), $S(O)_2$, or is a bond; and

each of $R_1$ to $R_5$ is independently a bond or is selected from the group consisting of:

hydrogen;

halogen;

azide;

an R group defined as C1 to C8 alkyl or alkenyl, aryl or heteroaryl optionally further substituted by:

an alkoxy, aryl, heteroaryl or aryloxy;

-COOH, $-S(O)_2OH$;

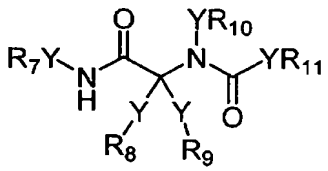
$-S(O)_2OH$, -S(O)OH, -S(O)R, $S(O)_2R$, $-S(O)_2NH_2$, $-S(O)_2OR$, -S(O)OR;

-C(O)R;

a heterocylic group further substituted by:

an alkyl, aryl, $-CH_2NHC(O)R$, $-CH_2N(C(O)R)_2$, or $-CH_2OR$;

a substructure of the following formula:




II

wherein at least one, but not more than two of $R_7$ to $R_{11}$ is independently a structure according to formula I;

wherein:

each Y is independently a bond, H, R or -C(O)R as defined above; and

up to but no more than one of each of $R_7$ to $R_{11}$ is independently a structure according to formula **II**, or each of $R_7$ to $R_{11}$ is independently absent; or

and each $R_1$ to $R_5$ may be connected to a different $R_1$ to $R_5$ to form a fused bicyclic structure;

with the provisos that;

when $R_1$ is $-CH_3$, $-S(O)_2OH$ or -H at least one of $R_2$ to $R_5$ is not -H or $-S(O)_2OH$;

when a substructure of type **II** is not present and none of $R_1$-$R_5$ form an anhydro bridge, no more than two of $R_1$-$R_5$ are $-S(O)_2OH$ and the stereochemistry of **I** is not gluco or galacto.

According to a second embodiment of the invention, there is provided a pharmaceutical or veterinary composition for the prevention or treatment in a mammalian subject of a disorder resulting from angiogenesis, metastasis, inflammation, coagulation, thrombosis, and/or microbial infection, which composition comprises at least one compound according to the first embodiment together with a pharmaceutically or veterinarially acceptable carrier or diluent for said at least one compound.

According to a third embodiment of the invention, there is provided the use of a compound according to the first embodiment in the manufacture of a medicament for the prevention or treatment in a mammalian subject of a disorder resulting from angiogenesis, metastasis, inflammation, coagulation, thrombosis, and/or microbial infection.

According to a fourth embodiment of the invention there is provided a method for the prevention or treatment in a mammalian subject of a disorder resulting from angiogenesis, metastasis, inflammation, coagulation, thrombosis, and/or microbial infection, which method comprises administering to the subject an effective amount of at least one compound according to the first embodiment, or a composition comprising said at least one compound.

In other embodiments of the invention, there are provided processes for synthesising the compounds according to the first embodiment as defined above.

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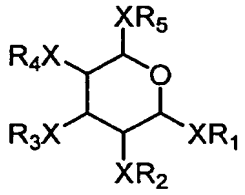
CLAIMS

1. A compound of the formula



I

wherein:

each X is independently $CH_2$, C(O), N, O, S, S(O), $S(O)_2$, or is a bond; and

each of $R_1$ to $R_5$ is independently a bond or is selected from the group consisting of:

hydrogen;

halogen;

azide;

an R group defined as C1 to C8 alkyl or alkenyl, aryl or heteroaryl optionally further substituted by:

an alkoxy, aryl, heteroaryl or aryloxy;

-COOH, $-S(O)_2OH$;

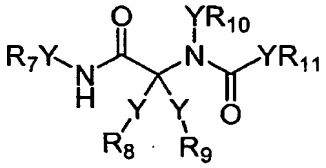
$-S(O)_2OH$, -S(O)OH, -S(O)R, $S(O)_2R$, $-S(O)_2NH_2$, $-S(O)_2OR$, -S(O)OR;

-C(O)R;

a heterocylic group further substituted by:

an alkyl, aryl, $-CH_2NHC(O)R$, $-CH_2N(C(O)R)_2$, or $-CH_2OR$;

a substructure of the following formula:



II

wherein at least one, but not more than two of $R_7$ to $R_{11}$ is independently a structure according to formula **I**;

wherein:

each Y is independently a bond, H, R or -C(O)R as defined above; and

up to but no more than one of each of $R_7$ to $R_{11}$ is independently a structure according to formula **II**, or each of $R_7$ to $R_{11}$ is independently absent; or

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each $R_1$ to $R_5$ is connected to a different $R_1$ to $R_5$ to form a fused bicyclic structure;

with the provisos that:

when $R_1$ is $-CH_3$, $-S(O)_2OH$ or -H at least one of $R_2$ to $R_5$ is not -H or $-S(O)_2OH$; and

when a substructure of type II is not present and none of $R_1$-$R_5$ form an anhydro bridge, no more than two of $R_1$-$R_5$ are $-S(O)_2OH$ and the stereochemistry of I is not gluco or galacto.

2. A compound according to claim 1, wherein said compound is PG2024, PG2037, PG2173, PG2198, as hereinbefore described.

3. A compound according to claim 1, wherein said compound is any one of the compounds of Tables 1-4 of the description.

4. A pharmaceutical or veterinary composition for the prevention or treatment in a mammalian subject of a disorder resulting from angiogenesis, metastasis, inflammation, coagulation, thrombosis, and/or microbial infection, which composition comprises at least one compound according to claim 1 together with a pharmaceutically or veterinarially acceptable carrier or diluent for said at least one compound.

5. The composition according to claim 4 which further includes a pharmaceutically or veterinarially acceptable excipient, buffer, stabiliser, isotonicising agent, preservative or antioxidant.

6. The composition according to claim 4, wherein said compound is present therein as an ester, a free acid or base, a hydrate, or a prodrug.

7. The composition according to claim 4, wherein one or more sulfate groups of said compound has been substituted for an alternate charged group.

8. The composition according to claim 7, wherein said alternate charged group is a phosphate, carboxylate or tetrazolyl anion.

9. Use of a compound according to claim 1 in the manufacture of a medicament for the prevention or treatment in a mammalian subject of a disorder resulting from angiogenesis, metastasis, inflammation, coagulation, thrombosis, and/or microbial infection.

10. The use according to claim 9, wherein said mammalian subject is a human subject.

11. A method for the prevention or treatment in a mammalian subject of a disorder resulting from angiogenesis, metastasis, inflammation, coagulation, thrombosis, and/or microbial infection, which method comprises administering to the subject an effective amount

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of at least one compound according to claim 1, or a composition comprising said at least one compound.

12. The method according to claim 11 wherein said mammalian subject is a human subject.

13. The method according to claim 11, wherein said disorder resulting from angiogenesis is a proliferative retinopathy or angiogenesis resulting from the growth of a solid tumour.

14. The method according to claim 11, wherein said disorder resulting from inflammation is rheumatoid arthritis, multiple sclerosis, inflammatory bowel disease, allograft rejection or chronic asthma.

15. The method according to claim 11, wherein said disorder resulting from coagulation and/or thrombosis is deep venous thrombosis, pulmonary embolism, thrombotic stroke, peripheral arterial thrombosis, unstable angina or myocardial infarction.

16. The method according to claim 11, wherein said disorder resulting from viral infection is Herpes Simplex.

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